

WHAT IS CLAIMED IS:

1. A monolayer or multilayer article produced from a composition comprising a hydrogenated block copolymer, wherein the hydrogenated block copolymer comprises at least two distinct blocks of hydrogenated vinyl aromatic  
5 polymer, and at least one block of hydrogenated conjugated diene polymer, wherein the copolymer is further characterized by:

a) a weight ratio of hydrogenated conjugated diene polymer block to hydrogenated vinyl aromatic polymer block of greater than 40:60;

b) a total number average molecular weight ( $M_n$ ) of from 30,000 to 150,000, wherein  
10 each hydrogenated vinyl aromatic polymer block (A) has a  $M_n$  of from 5,000 to 45,000 and each hydrogenated conjugated diene polymer block (B) has a  $M_n$  of from 12,000 to 110,000; and

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c) a hydrogenation level such that each hydrogenated vinyl aromatic polymer block has a hydrogenation level of greater than 90 percent and each hydrogenated conjugated  
15 diene polymer block has a hydrogenation level of greater than 95 percent.

2. The article of Claim 1 wherein the hydrogenated vinyl aromatic polymer block is selected from the group consisting of hydrogenated polystyrene, hydrogenated alpha-methylstyrene polymer, hydrogenated vinyltoluene polymer, a hydrogenated copolymer of styrene and alpha-methylstyrene, and hydrogenated styrene-vinyltoluene  
20 copolymer and the hydrogenated conjugated diene polymer block is selected from the group consisting of hydrogenated polybutadiene, hydrogenated polyisoprene, and a hydrogenated copolymer of butadiene and isoprene.

3. The article of Claim 1 wherein the composition additionally comprises at least one additional polymer.

25 4. The article of Claim 3 wherein the additional polymer is selected from the group consisting of hydrogenated vinyl aromatic homopolymers, other hydrogenated vinyl aromatic/conjugated diene block copolymers, thermoplastic

polyurethanes, polycarbonates (PC), polyamides, polyethers, poly/vinyl chloride  
polymers, poly/vinylidene chloride polymers, polyesters, polymers that contain lactic  
acid residuals, partially or non-hydrogenated vinyl aromatic/conjugated diene block  
polymers, a styrenic polymer, acrylonitrile-butadiene-styrene (ABS) copolymers,  
5 styrene-acrylonitrile copolymers (SAN), ABS/PC polymers, polyethylene terephthalate,  
epoxy resins, ethylene vinyl alcohol copolymers, ethylene acrylic acid copolymers,  
polyolefin carbon monoxide interpolymers, chlorinated polyethylene, cyclic olefin  
copolymers (COC's), and olefin homopolymers and copolymers.

5. The article of Claim 4 wherein the additional polymer is selected from  
10 the group consisting of a polyolefin, ethylene-styrene interpolymer, a partially or non-  
hydrogenated vinyl aromatic/conjugated diene block copolymer, a styrenic polymer,  
hydrogenated polystyrene, an other hydrogenated vinyl aromatic/conjugated diene block  
copolymer, and a cyclic olefin (co) polymer derived from monomers selected from the  
following group: substituted and unsubstituted norbornenes, dicyclopentadienes,  
15 dihydrodicyclopentadienes, trimers of cyclopentadiene, tetracyclododecenes,  
hexacycloheptadecenes, ethylidenyl norbornenes and vinylnorbornenes.

6. The article of Claim 4, wherein the hydrogenated block copolymer is  
present in an amount of from 0.5 to 99.5 weight percent, based on the total weight of  
the composition.

7. The article of Claim 4 wherein the composition additionally comprises a  
20 compatibilizer.

8. The article of Claim 1, wherein the article is selected from the group  
consisting of a film or sheet, an extruded profile, a coated article, an injection molded  
article, a blow molded article, a pultruded article, and a rotational molded article.

9. The article of Claim 8 which is selected from a lumbar bag, a blood bag,  
25 an IV solution bag, a dialysis bag, pharmaceutical blister packaging, food packaging, a  
consumer wrapping film, a fabric laminate, medical device film, transdermal patch,  
backing layer film, a label, a glove, a gasket, hose, tube, pipe, wire, cable, window

profile, weather-stripping, automotive profile, siding, sealing strips, medical tubing, hot water pipe, industrial pipe, rod, membrane, automotive instrument panel, door panel or seat skin; roofing material, geo-membrane, pond or pool liner, molded sheet, signage, a coated polymeric material, a coated fabric, a coated inorganic material, a coated paper, a coated cardboard, a coated wood product, a coated metal product, a spin coated product, an automotive bumper, an automotive exterior or interior trim article, an automotive gasket or seal, a packaging container, a co-injection molded article, an over-molded article, a bellows, a boot, a water tank, a shoe bladder, an injection blow molded article, a composite pipe, a safety barricade, a structural beam, a reinforcing member, a toy, a handle, a bladder, or an automotive interior cover.

10. A composition comprising:

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I) at least one hydrogenated block copolymer which comprises at least two distinct blocks of hydrogenated vinyl aromatic polymer, and at least one block of hydrogenated conjugated diene polymer, wherein the hydrogenated copolymer is further characterized by:

a) a weight ratio of hydrogenated conjugated diene polymer block to hydrogenated vinyl aromatic polymer block of greater than 40:60;

b) a total number average molecular weight ( $M_n$ ) of from 30,000 to 150,000, wherein each hydrogenated vinyl aromatic polymer block (A) has a  $M_{nA}$  of from 5,000 to 45,000 and each hydrogenated conjugated diene polymer block (B) has a  $M_{nB}$  of from 12,000 to 110,000; and

c) a hydrogenation level such that each hydrogenated vinyl aromatic polymer block has a hydrogenation level of greater than 90 percent and each hydrogenated conjugated diene polymer block has a hydrogenation level of greater than 95 percent, and

II) at least one additional polymer.

11. The composition of Claim 10 wherein the other polymer is selected from the group consisting of hydrogenated vinyl aromatic homopolymers, other hydrogenated vinyl aromatic/conjugated diene block copolymers, thermoplastic polyurethanes, polycarbonates (PC), polyamides, polyethers, poly/vinyl chloride polymers, poly/vinylidene chloride polymers, polyesters, polymers that contain lactic acid residuals, partially or non-hydrogenated vinyl aromatic/conjugated diene block polymers, a styrenic polymer, acrylonitrile-butadiene-styrene (ABS) copolymers, styrene-acrylonitrile copolymers (SAN), ABS/PC polymers, polyethylene terephthalate, epoxy resins, ethylene vinyl alcohol copolymers, ethylene acrylic acid copolymers, polyolefin carbon monoxide interpolymers, chlorinated polyethylene, cyclic olefin copolymers (COC's), and olefin homopolymers and copolymers.

12. The composition of Claim 11 wherein the additional polymer is selected from the group consisting of a polyolefin, a partially or non-hydrogenated vinyl aromatic/conjugated diene block copolymer, a styrenic polymer, hydrogenated polystyrene, an other hydrogenated vinyl aromatic/conjugated diene block copolymer, and a cyclic olefin (co) polymer derived from monomers selected from the following group: substituted and unsubstituted norbornenes, dicyclopentadienes, dihydrodicyclopentadienes, trimers of cyclopentadiene, tetracyclododecenes, hexacycloheptadecenes, ethylidenyl norbornenes and vinylnorbornenes.

13. The composition of Claim 10, wherein the hydrogenated block copolymer is present in an amount of from 0.5 to 99.5 weight percent, based on the total weight of the composition.

14. The composition of Claim 11 wherein the composition additionally comprises a compatibilizer.

15. An emulsion or dispersion comprising:

I') a dispersed polymer phase comprising at least one hydrogenated block copolymer which comprises at least two distinct blocks of hydrogenated vinyl

aromatic polymer, and at least one block of hydrogenated conjugated diene polymer, wherein the hydrogenated copolymer is further characterized by:

a) a weight ratio of hydrogenated conjugated diene polymer block to hydrogenated vinyl aromatic polymer block of greater than 40:60;

5        b) a total number average molecular weight ( $M_n$ ) of from 30,000 to 150,000, wherein each hydrogenated vinyl aromatic polymer block (A) has a  $M_{n_a}$  of from 5,000 to 45,000 and each hydrogenated conjugated diene polymer block (B) has a  $M_{n_b}$  of from 12,000 to 110,000; and

10       c) a hydrogenation level such that each hydrogenated vinyl aromatic polymer block has a hydrogenation level of greater than 90 percent and each hydrogenated conjugated diene polymer block has a hydrogenation level of greater than 95 percent,

II') a surfactant, and

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III') a continuous phase which is immiscible with the polymer phase.

16.     The composition of Claim 15 wherein the hydrogenated vinyl aromatic  
15     polymer block is selected from the group consisting of hydrogenated polystyrene, hydrogenated alpha-methylstyrene polymer, hydrogenated vinyltoluene polymer, a hydrogenated copolymer of styrene and alpha-methylstyrene, and hydrogenated styrene-vinyltoluene copolymer and the hydrogenated conjugated diene polymer block is selected from the group consisting of hydrogenated polybutadiene, hydrogenated  
20     polyisoprene, and a hydrogenated copolymer of butadiene and isoprene.

17.     The composition of Claim 15 additionally comprising a polymer selected from the group consisting of hydrogenated vinyl aromatic homopolymers, other hydrogenated vinyl aromatic/conjugated diene block copolymers, thermoplastic polyurethanes, polycarbonates (PC), polyamides, polyethers, poly/vinyl chloride  
25     polymers, poly/vinylidene chloride polymers, polyesters, polymers that contain lactic acid residuals, partially or non-hydrogenated vinyl aromatic/conjugated diene block polymers, a styrenic polymer, acrylonitrile-butadiene-styrene (ABS) copolymers,

styrene-acrylonitrile copolymers (SAN), ABS/PC polymers, polyethylene terephthalate, epoxy resins, ethylene vinyl alcohol copolymers, ethylene acrylic acid copolymers, polyolefin carbon monoxide interpolymers, chlorinated polyethylene, cyclic olefin copolymers (COC's), and olefin homopolymers and copolymers.

- 5           18.    The composition of Claim 17 wherein the additional polymer is selected from the group consisting of a polyolefin, a partially or non-hydrogenated vinyl aromatic/conjugated diene block copolymer, a styrenic polymer, hydrogenated polystyrene, an other hydrogenated vinyl aromatic/conjugated diene block copolymer, and a cyclic olefin (co) polymer derived from monomers selected from the following
- 10   group: substituted and unsubstituted norbornenes, dicyclopentadienes, dihydrodicyclopentadienes, trimers of cyclopentadiene, tetracyclododecenes, hexacycloheptadecenes, ethylidenyl norbornenes and vinylnorbornenes.

19.    The composition of Claim 17 wherein the composition additionally comprises a compatibilizer.

- 15           20.    The composition of Claim 15 wherein the stabilizer is an alkali or amine fatty acid salt or stearate; polyoxyethylene nonionic; alkali metal lauryl sulfate, quaternary ammonium surfactant; alkali metal alkylbenzene sulfonate, or an alkali metal soap.

21.    The composition of Claim 15 wherein the continuous phase comprises

20   water.

22.    An article produced from the composition of Claim 15.